

WHAT IS CLAIMED:

1. A molding machine comprising:

a fixed platen which is disposed at one end of a base plate and which supports a fixed die;

a movable platen which supports a movable die;

a supporting mount which supports each end portion of four tie bars which are inserted through the movable platen; the movable platen and the supporting mount being disposed on the front and rear of the base plate so as to be capable of advancing/retreating with respect to the fixed platen,

die opening/closing means which causes the movable platen and the supporting mount to advance/retreat so as to carry out die opening/closing by movable die in relation to the fixed die, and which causes the supporting mount to retreat from the movable platen after opening the die; and

a lock mechanism which is provided in the fixed platen, and which, in relation to the fixed platen, locks/unlocks the other end portion of each tie bar which is inserted in the fixed platen when closing the die; and

die clamping means which is disposed between the movable platen and the supporting mount, and which causes the movable platen to travel toward the fixed platen side in a die closed state so as to generate a clamping force between the fixed die and the movable die.

2. The molding machine according to claim 1, wherein the movable platen and the supporting mount are respectively mounted on a slide plate which is slidably coupled to a common rail disposed on the base plate through a bearing guide.

3. The molding machine according to claim 2, wherein the movable platen is mounted on the slide plate such that the movable platen is capable of floating on the slide plate.

4. The molding machine according to claim 3, wherein means for mounting the movable platen on the slide plate so as to be capable of floating is configured by convex and concave tapered fitting portions which are set at a center and four corners of the slide plate, in which a convex portion which constitutes the convex and concave tapered fitting portion at the center is formed by a fixed pin, and a convex portion which constitutes the convex and concave tapered fitting portions at the four corners is formed by a movable pin which is capable of floating upward and downward, respectively.

5. The molding machine according to any one of claims 1 to 4, wherein the supporting means which supports the one end portion of the tie bar to the supporting mount is configured by a screw portion which is disposed at the one end portion of the tie bar which is inserted through the supporting mount and which projects toward the back side of the supporting mount, a nut which is screwed to the screw portion, and urging means which constantly secures the nut by pressing it to the supporting mount.

6. The molding machine according to claim 5, wherein a dog is provided projecting from one end of the tie bar and a limit switch is disposed around an elongation line of the tie bar to be engaged with the dog when the tie bar moves relatively to the supporting mount.

7. The molding machine according to any one of claims 1 to 6, wherein a guide roller is disposed in a tie bar insertion hole of the movable platen, which supports the tie bar when closing the die and retreats from a supporting portion when clamping the die.

8. The molding machine according to any one of claims 1 to 7, wherein a plurality of air jet ports are provided in a bush which is fitted into the tie bar insertion hole of the fixed platen, which jet compressed air in the forward direction

of an insertion side of the tie bar and in the radially inward direction of the tie bar.

9. The molding machine according to any one of claims 1 to 8, wherein the die opening/closing means is configured by two driving means which independently drive the movable platen and supporting mount.

10. The molding machine according to claim 9, wherein each driving means is driven by a servo motor.

11. The molding machine according to any one of claims 1 to 10, wherein the die clamping means is configured by a die clamping cylinder which is disposed on the movable platen, and attaching and detaching mechanisms which attaches and detaches a rod end portion of the die clamping cylinder to the supporting mount, and the die clamping cylinder and the attaching and detaching mechanism are disposed at four corners which are at the inside of each tie bar.

12. A molding method comprising the steps of:

advancing a movable platen and a supporting mount using die opening/closing means so as to carry out die closing between a fixed die and a movable die;

inserting a tip portion of each of four tie bars, one end portion of which is supported by the supporting mount at the fixed platen;

securing the tip portion of each tie bar using a lock mechanism in this state;

executing molding by actuating die clamping means to generate a clamping force between the fixed die and the movable die; and

causing the lock mechanism to execute an unlocking operation and actuating the die opening/closing means so as to retreat the movable platen and the supporting mount to a die open position; and

retreating the supporting mount from the movable platen so as to evacuate the four tie bars from a vicinity of the fixed die and the movable die.